

**PURPOSE:** To evaluate interventions for improving fundamental motor skills (FMS) and physical activity (PA) levels in preschoolers. Mastery in FMS is associated with greater participation in PA in school aged children. Early childhood has been identified as the critical time for engaging in FMS development, however, there is limited research investigating this relationship in preschoolers aged 3-5 years.

**METHOD:** We conducted a systematic search of electronic databases up until 31st October 2014. Randomised control trials (RCTs) using PA interventions with FMS as outcome measures in preschoolers were eligible for inclusion. Studies including children with disabilities or developmental delays were excluded. Between group mean differences, relative effect sizes (ES) and 95% confidence intervals were calculated for each outcome.

**RESULTS:** Search terms yielded 1411 articles of which 8 RCTs and 2747 participants met the inclusion criteria. Studies were dichotomised into two groups (i) Teacher-Led (TL) Interventions (n=7) and (ii) Child-Centred (CC) Interventions (n=1). Mean age of children studied was  $4.0 \pm 0.8$  yrs, with an equal gender distribution. Mean body mass index (BMI) was  $16.52 \pm 0.23$ . On average interventions ran for  $24 \pm 10$  wks,  $3 \pm 1$  times per week for  $27 \pm 6$  mins. Five of the 7 TL studies reported significant improvements in FMS (ES Range 0.21-0.85;  $p \leq 0.01$ ). The CC intervention also reported significant improvements in FMS,  $p \leq 0.001$ . Five TL interventions reported changes in PA levels, with one reporting significant improvements (ES 0.47;  $p \leq 0.01$ ). Four studies reported body composition, with one reporting a significant decrease in BMI ( $p=0.02$ ) and waist circumference ( $p=0.002$ ).

**CONCLUSION:** There is emerging evidence that PA interventions can improve FMS in preschoolers; however, there is a dearth of evidence on CC interventions, where an intervention is delivered directly to children by a trained professional. Targeting FMS development in this age group may promote higher PA levels throughout childhood, however more study is needed. Long term follow up is required to determine if improving FMS at preschool age increases participation in sports and PA. In addition, will it lead to lifestyle patterns throughout adolescence and adulthood, that will reduce the risk of metabolic and cardiovascular diseases.

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1423 Board #216 May 28, 8:00 AM - 9:30 AM

**Effects Of 6-month Soccer And Traditional Physical Activity Programs On Body Composition, Cardiometabolic, Inflammatory And Oxidative Markers In Obese Boys**

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**BACKGROUND:** Physical activity (PA) is important in obesity prevention; however, the effectiveness of different PA modalities remains to be determined among children.

**PURPOSE:** To compare the effects of a 6-month soccer program and a traditional PA program on changes in body composition, cardiometabolic risk factors (CMRF), inflammatory and oxidative stress markers, cardiorespiratory fitness (CRF) and perceived psychological status of obese children.

**METHODS:** Eighty eight boys (8-12 yrs; BMI >2 standard deviations of WHO reference values) participated in one of three groups: soccer (SG), traditional activity (AG) and control (CG). SG and AG programs involved 3 sessions per week for 60-90 min at an average intensity of 70-80% of maximal heart rate (HRmax). CG participated in activities of normal daily living. All boys participated in school physical education, two sessions per week 45-90-min. Measurements were taken at baseline and after 6 months, and included body size and composition (total body bone mineral content and density, percentage body fat, lean mass using DXA), CMRF (blood pressure, fasting blood glucose, high-density lipoprotein-cholesterol, total cholesterol, triglycerides, fasting insulin), inflammatory and oxidative stress markers (adiponectin, leptin, resistin, C-reactive protein), CRF and perceived psychological status (self-esteem, body image, attraction to PA, quality of life). PA and dietary intake were assessed before and immediately following the intervention.

**RESULTS:** The three groups had similar characteristics at baseline. After 6 months both intervention groups had significantly lower fat percentage (SG:-6.9% vs CG:8.3%,  $p=0.03$ ; AG:-12.0% vs CG:8.3%,  $p=0.006$ ), waist circumference (SG:-5.3% vs CG:-0.2%,  $p=0.002$ ; AG:-5.0% vs CG:-0.2%,  $p=0.006$ ) and total cholesterol (SG:-7.5% vs CG:3.9%,  $p=0.036$ ), and higher self-esteem (SG:8.2% vs CG:-12.0%,  $p=0.001$ ; AG:9.7% vs CG:-10.8%,  $p=0.007$ ), perceived physical competence (SG:7.9% vs CG:-4.9%,  $p=0.010$ ; AG:7.4% vs CG:-4.9%,  $p=0.025$ ) and attraction to PA (SG:8.2% vs CG:-1.0%,  $p=0.014$ ; AG:6.4% vs CG:-1.0%,  $p=0.049$ ) compared with CG.

**CONCLUSIONS:** PA interventions over 6 months positively influenced several indicators of health status among obese boys. The results also suggested that soccer has the potential as an effective tool for the prevention and reduction of childhood obesity and associated consequences.

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1424 Board #217 May 28, 8:00 AM - 9:30 AM

**Combined Effects Of Physical Activity And Sleep On Diabetes Risk Factors In Pre-Adolescent African-American Girls**

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(No relationships reported)

**BACKGROUND:** There is evidence to indicate that African-American girls are at an increased risk for type 2 diabetes (T2DM) due to lower physical activity (PA) or sleep duration compared to Caucasian girls. To date, most cross-sectional studies have focused on either sleep or PA and their independent effects with T2DM risk factors.

**PURPOSE:** To examine the combined effects of sleep duration and total PA with T2DM risk factors (fasting insulin concentration, fasting glucose concentration and body mass index (BMI)) of interest in pre-adolescent African-American girls.

**METHODS:** Baseline data of girls (n=21; age= $8.28 \pm 1.23$ ; BMI= $18.15 \pm 3.07$  kg/m<sup>2</sup>) participating in the Mothers and Girls Dancing Together study were used in this analysis. PA was measured for seven consecutive days using the Actigraph GT3X+ accelerometers. Children's Sleep Habits Questionnaire, a non-invasive parental report, was used to assess sleep duration. BMI was calculated using participants' height and weight. Using fasted blood samples, glucose and insulin concentrations were determined using glucose oxidase and human-specific radioimmunoassay methods, respectively. Spearman correlations were used to examine the associations between total PA and sleep duration and T2DM risk factors of interest. To examine the combined effects of total PA and sleep, the total sample was divided into tertiles based on their total PA and sleep scores. Between group differences on T2DM risk factors were examined using the Kruskal-Wallis test.

**RESULTS:** No significant associations were observed between sleep duration or PA on T2DM risk factors of interest. In addition, no significant group differences were observed between the high vs low PA/sleep groups on any T2DM risk factor variables of interest.

**CONCLUSION:** In this small sample of African-American girls, there does not appear to be a combined effect of PA and sleep duration on T2DM risk factors.

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1425 Board #218 May 28, 8:00 AM - 9:30 AM

**Effects of An Early Childhood Education Program on Preschool Children's Gross Motor Development**

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**PURPOSE:** Gymboree Play & Music® program has benefited thousands of 0-5 yr. old children since 1975. Based on sensory-motor learning and sensory integration theories, Gymboree's age-appropriate activities are designed to promote the development of cognitive, physical, and social skills of children through play and physical activities. Yet, the effectiveness of the Gymboree program has not been carefully examined. The aim of this study was to examine the impact of the Gymboree program on preschool children's gross motor development.